Political Allocation of Agriculture Disaster Payments in the 1990s

Political Allocation of U.S. Agriculture Disaster Payments in the 1990s

Thomas A. Garrett
Research Division
Federal Reserve Bank of St. Louis
St. Louis, Missouri 63102
(314) 444-8601
tom.a.garrett@stls.frb.org

Thomas L. Marsh
School of Economic Sciences
Washington State University
Pullman, WA 99164-6210
(509) 335-8597
tl_marsh@wsu.edu

Maria I. Marshall
Department of Agricultural Economics
Purdue University
West Lafayette, Indiana 47907
(765) 494-4268
mimarsha@purdue.edu

JEL Codes: D78, D72, Q18

Keywords: Agriculture, Congressional dominance, disaster relief, public choice

Abstract

Legislation passed during the 1990s attempted to move U.S. agriculture disaster relief to a more market oriented process. The failure of this legislation has been attributed to the political system behind agricultural disaster relief. This paper explores the impact of political influence on the allocation of U.S. direct agriculture disaster payments. The results reveal that disaster payments are not based solely on need, but are higher in those states represented by public officials key to the allocation of relief. The effectiveness of legislation aimed at promoting more efficient disaster payments systems, such as crop insurance, over direct cash payments is also examined.

Political Allocation of U.S. Agriculture Disaster Payments in the 1990s

Introduction

Over the past thirty years the U.S. Government has taken an active role in providing agriculture disaster relief to America's farmers. Most recently, the Agricultural Assistance Act of 2003 was signed into law providing an estimated $3.1 billion in assistance to producers for weather related disasters and other emergency conditions.[1] Relief has commonly been available through emergency loans, crop insurance, or direct (cash) disaster payments. Of these, direct disaster payments are considered the least efficient form of disaster relief (Goodwin and Smith, 1995).

The 1990s saw a marked change in the focus of agricultural disaster relief policies. Several pieces of legislation were passed that attempted to move disaster relief to a more market-oriented process. Specifically, this legislation created incentives for higher crop insurance participation among America's farmers rather than continued reliance on direct cash payments for agricultural losses. However, while this legislation was effective at reducing direct payments in the short term, the late 1990s saw a dramatic increase in direct cash payments. A cited reason (Goodwin and Smith, 1995) for the relative ineffectiveness of this legislation to increase crop insurance participation is that the process of agricultural disaster relief occurs in a political arena. The amount of disaster relief available through emergency loans and crop insurance is determined by contracts, whereas direct disaster relief is determined solely by legislators after a disaster occurs. As a result, concern is that direct cash payments have become the *de facto* dominant source of crop insurance (Gardner, 1994).

While neoclassical models that formulate the efficiency of government programs often focus on social welfare maximization and marginal benefits versus marginal costs, these models

tend to ignore the processes in the political market in which these programs are developed and implemented. As suggested by Goodwin and Smith (1995), institutions do matter. A central contribution of public choice theory to the analysis of any government activity is in viewing the activities of government, not as determined by some single altruistic dictator, but rather as a result of a process involving political agents who react to the incentives they face. Judging the overall efficiency of any policy or outcome must also consider the efficiency of the process in which the policy or outcome is formulated.

Many studies have explored the highly political nature of agricultural policies. Rent-seeking (Tullock, 1967; Kruger, 1974) in agriculture has been studied by Bullock and Rutstrom (2001) and Bullock and Coggins (2001). Schmitz, Furtan, and Baylis (2002) write extensively on how political rent-seeking rather than social welfare maximization dictates U.S. agriculture policy. Bullock (1994) applies Becker's (1983) interest group model to agriculture subsidies by demonstrating that while agriculture pressure groups compete for governmental transfers, market conditions often affect political agents' expenditures to pressure groups. Gardner (1987) formalizes Becker's interest group model to explain why American farmers receive large government transfers despite comprising only a very small portion of the total U.S. population. Abler (1989) showed that ideological factors and special interest contributions rather than constituent preferences can have significant power in explaining congressional voting (Kau and Rubin, 1982). Exploring vote trading on farm legislation in the U.S. House of Representatives, Abler finds that coalitions of farm groups can obtain more through vote trading than could be obtained individually. In a study of U.S. sugar legislation, Brooks, Cameron, and Carter (1998) find that Political Action Committee (PAC) contributions rather than constituent preferences were significant determinants of legislators' votes.

The purpose of this paper is to present a more complete model of U.S. agriculture disaster relief during the 1990s that captures the political processes underlying agriculture disaster relief. We first examine the relationship between states' representation on direct disaster payment oversight committees and the level of disaster relief received.[2] Beginning with Buchanan and Tullock (1962) and expanded by Moe (1987), numerous researchers have focused on the relationship between a bureaucracy and its congressional sponsors. This congressional dominance model suggests that legislators on congressional committees having both budget and oversight responsibilities see that bureaucrats implement the policy preferences of the legislators.[3] Congressional dominance and agriculture disaster relief is interesting because public officials often promote direct disaster relief as a savior for those farmers hit by a disaster, thus suggesting that only the altruistic intentions of legislators motivate the allocation of direct disaster relief.

We also explore the effectiveness of various pieces of agriculture disaster relief legislation passed during the 1990s, namely legislation aimed at substituting crop insurance, an arguably more efficient method of disaster relief, for direct cash payments. The hypothesis is that wider participation in crop insurance should influence agricultural disaster payments. Indeed, there has been considerable theoretical and empirical discussion as to the degree of correlation (or lack thereof) found between disaster payments and crop insurance payments (Wright and Hewitt, 1994; Schmitz, Just, and Furtan, 1994). We find mixed evidence that agriculture disaster and crop insurance payments were simultaneously determined and negatively correlated over the study period.

Evidence is further provided, by geographic region, on the dollar amount of over-payment resulting from subcommittee membership. These overpayments account for several

billion dollars of direct agriculture disaster payments. The results have implications regarding the efficiency of the direct agriculture disaster relief program and implications for future restructuring of policies that focus on disaster relief and other governmental risk management programs. In addition, the analysis casts doubt on the purely altruistic motives of legislators and the direct agriculture disaster payment program.

Agricultural Disaster Relief in the United States

Disaster relief in the United States has commonly taken one of three forms - emergency loans, crop insurance, and direct disaster payments (U.S. GAO, Goodwin and Smith, 1995, chapter 1). The emergency loan program was started in 1949 through the Farmers Home Administration. Under this program, producers who experience losses from natural disasters are able to obtain low interest loans. Emergency loans averaged nearly $1 billion annually throughout the 1990s (U.S. GAO).

The 1938 Crop Insurance Act provided farmers federal protection against certain crop losses (wheat and cotton) from multiple risks. The Act was amended in 1980 to cover all crops and extend crop insurance through private insurance companies and give producers a choice in the level of coverage. Rates are based on geography, and the program is subsidized in part by the federal government. Despite paying nearly $10 billion during the 1990s (USDA Risk Management Agency), participation in the crop insurance program has been low, averaging roughly 35 percent over the past two decades (Federal Crop Insurance Corporation).[4]

Direct agricultural disaster payment programs were instituted with the introduction of the Agriculture and Consumer Protection Act of 1973.[5] Direct disaster payments from the government provide cash payments to producers who suffer catastrophic losses, and are managed

through the USDA's Farm Service Agency (FSA). The bulk of direct disaster funding is used to reimburse producers for crop and feed losses rather than livestock losses. Direct disaster payments approached $30 billion during the 1990s (USDA Farm Service Agency), by far the largest of the three disaster relief programs. Unlike the crop insurance program which farmers use to manage their risk, it is usually legislators who decide whether or not a direct payment should be made to farmers after a disaster occurs.[6] Furthermore, direct payments have been blamed for low participation in the crop insurance program.[7] One hypothesis is that the 'free' disaster relief available through direct payments gives little incentive for producers to pay for crop insurance coverage.[8] Also, legislators from agricultural states find it politically harmful not to subsidize farmers who experienced a disaster, given the presence of organized agriculture interest groups (Becker, 1983; Gardner, 1987).

Agricultural disaster relief programs remained persistent through the 1970s, 1980s, and into the 1990s.[9] The Food, Agriculture, Conservation, and Trade Act of 1990 continued to move agriculture in a market-oriented direction and to authorize extensive disaster payments for weather-related losses. The Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994 instituted new catastrophic coverage levels that were minimum levels at which producers had to purchase crop insurance in order to participate in federal programs and receive federal assistance. The mandatory requirement was implemented in 1995, yielding record high acres of insured crops, and then the mandatory requirement was repealed in 1996. The Act also created the Noninsured Assistance Program that is a permanent aid program for crops not covered by crop insurance. From 1995 to 1997 direct disaster relief decreased dramatically.

The Federal Agricultural Improvement and Reform Act of 1996 removed the link between income support payments to producers and farm commodity prices. It also allowed producers to not participate in the catastrophic crop insurance program, but at the expense of waiving eligibility for disaster assistance. By 1998, and through 1999, direct agricultural disaster payments were on the rise again. Emergency farm spending continued with the Omnibus Appropriations Act of 1999 that provided $6 billion in emergency supplemental appropriations to the USDA to assist farmers who suffered losses due to natural disasters and low farm commodity prices. Figure 1 summarizes total direct agricultural disaster expenditures in 1996 dollars for the U.S. from 1992 to 1999.

[Figure 1 about here]

Expenditures and the Process of Direct Disaster Relief

The top ten and bottom ten states in terms of direct agriculture disaster relief received (in 1996 dollars) from 1992 to 1999 are shown in Table 1. Direct disaster relief consists of all monies disbursed through the FSA due to crop and feed stock losses occurring from natural disasters.[10] For the 48 contiguous states, direct agriculture disaster payments totaled $27.5 billion. Over 40 percent of all direct disaster aid ($11 billion) was received by four states - Iowa, Illinois, Nebraska, and Minnesota, whereas the bottom ten states received less than one percent ($165.3 million) of total direct disaster aid. Clearly, the more agricultural states receive significantly higher levels of direct disaster relief. However, the important question asked here is whether direct disaster relief to a state is based solely on the frequency and magnitude of disasters, or whether congressional influence also impacts the level of disaster relief.

[Table 1 about here]

Understanding the process of direct agriculture disaster relief is important for the subsequent analysis. In general, direct agriculture disaster relief is available to compensate producers for the loss of crop or feed losses due to drought, flooding, and extreme temperatures. Of these, drought is the most common reason disaster relief is given. The secretary of agriculture has the responsibility to declare an area a disaster, although in the case of small localized disasters individual legislators and congressional committees may simply appeal for an appropriation of funds. Producers may receive direct relief through a specific FSA program (i.e., pasture recovery program, emergency conservation program) or may receive general relief through non-program FSA sources. To receive disaster assistance through a specific program, producers are required to provide a production history to the FSA prior to any disaster in order to receive relief after a disaster occurs. Regardless of whether relief is received through a specific program, the monies are appropriated by Congress to the FSA for disbursement after a disaster strikes - there is no discretionary budget to cover all agriculture disaster relief. Before any relief is approved by Congress, the relief packages are first formulated within several House and Senate subcommittees that have oversight responsibility of the FSA's direct disaster relief program.

Based on the above process, previous research on congressional dominance has shown there are several means in which direct disaster relief can be manipulated for political gain. Since oversight committee members influence the amount of disaster relief appropriated to the FSA, there is certainly a political incentive for committee members to increase the amount of direct disaster relief going to their own constituents, especially if organized agricultural interest groups lobby for the payments (Becker, 1983; Gardner 1987). Similarly, since the secretary of agriculture takes an active role in the disaster relief process there may be political incentives for

the secretary to provide more relief to his home state. Second, because the oversight committees oversee other FSA operations as well as direct disaster relief, the FSA may have incentives (i.e., receiving larger budgets, more administrative flexibility, less oversight) to keep the members of FSA oversight committees happy.

Data and Methodology

This section provides a detailed description of the data and empirical methodology. We utilize an extensive data set managed specifically to maintain transactions of all agricultural disaster payments in the U.S. The basic premise of the empirical models is to first capture non-political factors that impact direct disaster payments. These include factors such as weather and the size of the agricultural sector. Political variables are then included in hopes of capturing the impact of political influences on direct agriculture disaster payments. All data cover the 48 contiguous states from 1992 through 1999 and are in real 1996 dollars.

Controlling for Disaster Size

Direct agriculture disaster payments are certainly related to the severity of an actual disaster in addition to any possible political influence of oversight committee members and the secretary of agriculture. Thus, it is important to control for disaster size in the empirical models to accurately assess the impact of political influence on direct disaster expenditures.

A majority of agriculture disasters result from drought. The more severe the drought the greater the losses to crops and feed stock. Therefore, precipitation serves as a good proxy for droughts that lead to agriculture disasters.[11] For each state, average annual precipitation data were gathered over the period 1991 to 1999 from the National Oceanic Atmospheric

Administration's (NOAA) National Climatic Data Center. Because it is more likely the change in precipitation from one year to another rather than absolute precipitation levels that dictates disaster severity, the annual percentage change in precipitation for each state was calculated from 1992 to 1999. To effectively capture differences in periods of dryness or wetness, the percentage change variable was separated into two different variables.[12] To capture periods of increased wetness, one variable contains positive percentage changes in precipitation and a '0' otherwise. Periods of relatively dryer weather are reflected in another variable containing negative percentage changes in precipitation and a '0' otherwise. The positive percentage change in precipitation variable is expected to have a positive relationship with direct disaster payments, whereas a negative relationship between the negative percentage change in precipitation variable is expected to reflect higher disaster payments during dryer periods.

Crop losses may also occur through changes in low temperature, i.e., unexpected or extremely severe freezes. For each state, the lowest temperature recorded each year from 1991 to 1999 was obtained from NOAA's National Climatic Data Center. The annual percentage change in low temperature was then computed for each state from 1992 to 1999.[13]

Oversight Subcommittee Variables

To explore whether those states having representation on FSA direct disaster payment oversight subcommittees receive higher direct agriculture disaster payments, it was determined which U.S. House and Senate subcommittees have FSA direct disaster payment oversight responsibilities, and how many legislators from each state for a given year serve on each FSA oversight subcommittee. This information was obtained from the *Almanac of American Politics* over various years and was verified through the FSA.

There are a total of four subcommittees that oversee FSA direct disaster relief, two in the House of Representatives and two in the Senate. In the House, the two subcommittees that oversee direct disaster relief are 1) the General Farm Commodities, Resource Conservation, and Credit subcommittee of the House Agriculture Committee, and 2) the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies subcommittee of the House Appropriations Committee. In the Senate, the two oversight subcommittees are 1) the Research, Nutrition, and General Legislation subcommittee of the Senate Agriculture Committee, and 2) the Agriculture, Rural Development, and Related Agencies subcommittee of the Senate Appropriations Committee. While all four subcommittees oversee direct disaster relief, the subcommittees of the House and Senate Appropriations committees have the final say regarding the amount of direct disaster relief that should be made available. This suggests that the subcommittees of the House and Senate Appropriations committees may have a more significant impact on direct disaster relief than subcommittees of the House and Senate Agriculture committee.

The total number of members on each of the four subcommittees is relatively constant over the years, although membership can vary. In most cases, a state will only have one legislator on an each oversight subcommittee at a time. A listing of each subcommittee and the average number of members on each subcommittee over the period 1992 through 1999 is provided in Table 2.

[Table 2 about here]

For each subcommittee, a variable is created to test whether states having representation on a FSA direct disaster payment oversight subcommittee receive higher disaster payments. Each committee variable takes the value of 'l' if state *i* in year *t* has a legislator on the oversight

subcommittee, '0' otherwise.[14] It is expected that some or all of the four subcommittee variables will be positively related to direct agriculture disaster payments, suggesting that the average level of direct disaster payments are higher in those states having representation on disaster payment oversight subcommittees.[15] The coefficient estimates on the subcommittee variables will thus reveal the average dollar costs of congressional influence within the direct agriculture disaster payment program.

Other Variables

There are several additional variables included in the analysis. The number of farms in state *i* during year *t* is included to account for the size of the agricultural sector. We also consider average farm size (total crop acres divided by the number of farms). These two variables proxy political power in the agricultural sector. The number of farm captures the size of the agricultural sector in the state. Also, following Becker (1983), farmers may generate greater political influence in states with a few large farms than they do in states with many small farms. Average farms size captures this potential for collective action. The number of farms was obtained from the U.S. Bureau of the Census' Bureau of Economic Analysis.

Because the secretary of agriculture plays an important role in the disaster relief process, a binary dummy variable is included to test whether the secretary's home state receives, on average, higher levels of agriculture disaster relief. The secretaries of agriculture over the 1992 to 1999 sample period were Edward Madigan from Illinois (1991-1993), Mike Espy from Mississippi (1993-1994), and Dan Glickman from Kansas (1995-1999). These data are available through various years of the *Almanac of American Politics.*

Crop insurance payments are also considered. These payments include both government and private insurance payments from the Crop Insurance program, and are computed from subtracting total farmer payments (which equals total insurance premiums minus a federal subsidy) from total indemnity payments. These data are available through the USDA's Risk Management Agency. While the crop insurance variable may also serve as a proxy for the severity of an agricultural disaster, the inclusion of the variable allows an empirical measure of the impact the crop insurance program has on direct disaster relief. To capture potential impacts of policy changes between the early and late 1990s, we constructed a dummy variable for 1998 and 1999 (D1 = '1' for years 1998 and 1999 and '0' otherwise) which is interacted with the crop insurance variable.[16]

Also included in the models are nine regional binary dummy variables. A state's assignment to a particular region is based on the assignment given by the U.S. Bureau of the Census.[17] Regional dummy variables are included to capture geographic and further climatic differences across disaster expenditures. For example, in the regression model below the representative region is set to the West North Central, which includes six of the top ten states in disaster agricultural expenditures reported in Table 1. Hence, we anticipate the regional disaster expenditure effect from the West North Central to dominate that of the remaining regions.

Finally, yearly dummy variables are used to measure the impact of disaster legislation and farm program changes and to capture other temporal effects. Here, the representative year is chosen to be 1996. Two prominent events surrounding this period include the Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994 and the Federal Agricultural Improvement and Reform Act of 1996.

The Model

Direct agricultural disaster expenditures are regressed on the above variables to determine the impact congressional oversight has on the level of disaster relief. The model takes the form:

$$y_{it}^* = \boldsymbol{\beta}'\mathbf{x} + e_{it} \qquad \textbf{(1)}$$

$$y_{it} = 0 \text{ if } y_{it}^* \leq 0,$$

$$y_{it} = y_{it}^* \text{ if } y_{it}^* > 0$$

The dependent variable is censored since some states did not receive any direct agriculture disaster relief in certain years.[18] Given the censored nature of the dependent variable, performing OLS on equation (1) will result in inconsistent coefficient estimates. A tobit regression model is used to account for the censored data and arrive at consistent coefficient estimates. Since we are interested in the impact of the explanatory variables on disaster relief given that a disaster has declared, we report the tobit coefficients rather than the marginal effects. The tobit coefficients are thus interpreted conditionally as a measure of the impact of the explanatory variable on the dependent variable given that a disaster assistance payment has been made in that year for that state (positive values of y_{it} only).[19]

An important issue that arises regarding the estimation of the disaster relief model is potential endogeneity. It is possible that the crop insurance variable is endogenous to many of the right hand side variables. Furthermore, there is likely some degree of simultaneity occurring between the crop insurance variable and the direct disaster payment variable. This suggests the following simultaneous tobit model proposed by Smith and Blundell (1986):

$$y_1^* = \boldsymbol{\beta}'\mathbf{x_1} + \delta y_2 + e_1 \qquad \textbf{(2a)}$$

$$y_2 = \boldsymbol{\theta}'\mathbf{x_2} + e_2 \qquad \textbf{(2b)}$$

where again $y_1 = 0$ if $y_1^* \leq 0$ and $y_1 = y_1^*$ if $y_1^* > 0$. Here, y_2 denotes crop insurance payments (non-censored). The problem of simultaneity arises if there is correlation between e_1 and y_2.[20]

It is also possible that a simultaneity problem arises with each of the four subcommittee variables. The question is whether legislators from states having relatively more agricultural disasters are more likely to be on an FSA direct disaster relief oversight subcommittee than legislators from less disaster-prone states? Weingast and Marshall (1988) provide evidence that, at least to some degree, legislators may attempt to self-select to those oversight committees that are relevant to their constituents' interests. Testing for the endogeneity of each committee variable within a tobit framework is done exactly as with the crop insurance variable, but with y_2 representing one of the four subcommittee variables.[21]

Simultaneity tests based on the above method by Smith and Blundell (1986) reveal that the crop insurance variable is endogenous.[22] Regarding the subcommittee variables, the tests reveal that none of the four oversight subcommittee variables are endogenous.[23] Given the simultaneity of the crop insurance variable, the simultaneous tobit model shown in (2a) and (2b) is therefore estimated with y_2 denoting crop insurance payments.[24]

Empirical Results

Five different tobit models are reported in Table 3. The first model is the standard tobit model not correcting for simultaneity between disaster expenditures and crop insurance payments. The second and third models are simultaneous tobits without and with the political subcommittee variables, respectively. To facilitate estimation, direct agriculture disaster payments and crop insurance payments were scaled by 1,000,000 in models (1) through (3). The fourth and fifth models are simultaneous tobit models where the dependent variable is

normalized by the total number of farmed acres per state and the total number of farms per state, respectively.[25] The alternative tobit models exhibit the sensitivity and robustness of the empirical results across model specification and simultaneity issues with crop insurance payments. Only the tobit coefficient estimates from the direct disaster payment model (2a), but not the estimates from the reduced from crop insurance model (2b), are presented.

[Table 3 about here]

Comparing across models, model (4) has fewer significant coefficients relative to model (1) through (3) and model (5). Not surprisingly, normalizing total disaster payments by farm acres renders the number of farms variable insignificant in model (4).[26] Meanwhile, the year variables remain qualitatively similar across the three models. In regards to the political variables, the House Appropriations subcommittee remains significant in each of the three models. We address the non-political and political determinants of agricultural disaster relief, as well as year and regional variables, in more detail below.

Non-political Variables

Some general observations can be made regarding the non-political variables. The precipitation coefficients reveal that states having greater positive annual percentage changes in precipitation (more wetness) tend to have significantly greater direct disaster payments except for model (4). The states having greater negative changes in precipitation (more dryness) receive more total disaster payments in models. This finding is consistent with the fact that the majority of agricultural disasters result from extreme precipitation changes. Negative changes in precipitation are insignificant for per acre and per farm disaster payment in models (4) and (5). The empirical evidence also indicates that annual percentage changes in low temperature do not

significantly impact direct disaster relief except in model (5). This result may be an artifact of the aggregate nature of the data used here and the small percentage of all agriculture losses that are due to extreme low temperatures.

The crop insurance variable is significant and positive in model (1), but significant and negative in model (2) through (5). The crop insurance and time dummy interaction variable is positive in model (2) through (5) and insignificant in model (4). Together these results suggest that although crop insurance payments in a state were negatively correlated with the level of direct agriculture disaster relief over the sample period, the negative effect is significantly less in 1998 and 1999. This is possibly a result of required participation in the catastrophic crop insurance program in order to be eligible for disaster assistance.

Political Variables

The secretary of agriculture coefficient is positive and significant in model (1), but insignificant across the remaining models. Thus, indicating that the home state of the secretary does not receive higher levels of total direct disaster relief.

Total disaster payments within a state increase with the number of farms. For example, from model (3), each additional farm is shown to lead to an additional $1,300 in total direct disaster relief. Average farm size is positive and significant in model (5). This finding provides evidence of possible collective action as suggested by Becker (1983).

The estimates for the oversight subcommittee variables are shown in model (1) and model (3) through (5) in Table 3. Based on the asymptotic t-values, the empirical evidence suggests that membership on the House and Senate Agriculture oversight subcommittees results in significantly higher levels of disaster relief for models (3) and (5).

Although there is mixed evidence that membership on Agriculture subcommittees results in higher levels of direct disaster relief, there is strong evidence that membership on the House Appropriations subcommittee leads to higher levels of total direct disaster relief. This difference between the Agriculture and Appropriation subcommittees is consistent with the fact that both the House and Senate Appropriations subcommittees, unlike the Agriculture subcommittees, are directly involved with the appropriation of dollars for direct disaster relief. Both the House and Senate Appropriations subcommittees are significant in model (3), but only membership on the House Appropriations subcommittee is significant in model (4) and model (5). From model (3), those states having representation on the Senate Appropriations subcommittee receive roughly $22 million more in total disaster relief. The coefficient estimates suggest that total disaster payments are about $44 million higher in those states having representation on the House Appropriations subcommittee. Model (4) suggests that states having representation on the House Appropriations subcommittee receive roughly $1.84 per acre more in direct disaster relief. Meanwhile, model (5) reveals that states having representation on the House Appropriations subcommittee receive about $296.00 per farm more in direct disaster relief. While there is marginal empirical evidence suggesting that membership on the Senate Appropriations subcommittee leads to higher disaster relief, there is compelling evidence suggesting that membership on House Appropriations subcommittee provides a higher average level of direct disaster relief.

Year and Regional Variables

The year variables provide insight on how budget surpluses or deficits, legislation, policy and other changes influenced disaster relief. The 1996 dummy variable (excluded from the model) is not significantly different from the 1997 year variable across all models. In contrast,

the 1992-1995, 1998, and 1999 expenditures significantly exceeded the 1996 expenditures in large magnitudes for models (1) through (5). Evidently the mandatory purchase of crop insurance in order to participate in federal programs and receive federal assistance under the Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994 only temporarily reduced the use of disaster relief for agriculture. Interestingly, under the Federal Agricultural Improvement and Reform Act of 1996, farm income payments were decoupled from farm prices and ad hoc emergency programs were augmented to funnel relief to producers not only in times of natural disaster but also for periods with persistently low farm prices.

Finally, the U.S. census regions provide further insight into geographic, climatic, and other effects. The results tended to indicate that West North Central (excluded from the model) had significantly higher levels of total direct agricultural disaster payments relative to the other census regions. This was followed by the East North Central. On average the Pacific and East South Central received around $200 million dollars less in total disaster relief than did the West North Central.

Estimating the Costs of Political Influence - By Region and U.S. Total

The results in the previous section provide evidence of political influence over direct agriculture disaster relief. The average dollar costs of this political influence were measured by the coefficient estimates on the subcommittee variables.

A more detailed analysis by region can provide evidence on the full dollar costs of political influence on the direct disaster payment program at the state level. First, predicted values for the respective dependent variable are obtained for each state in each year using the coefficient estimates from model (3) through (5) in Table 3. These predicted totals account for

both political influences and the magnitude of actual crop and feed stock losses. Next, direct disaster relief due solely to political influence from the amount of direct disaster relief received from subcommittee oversight is computed. Based on model (3) through (5), this is done using the significant subcommittee coefficient estimates from each model. Once state level predictions of total direct payments and those payments due to political influenced were obtained, these values were then summed according to U.S. Census region (see Appendix).

The predictions are shown in Table 4. For each model, column (1) shows the amount of direct disaster relief resulting from political influence. The percent of direct disaster payments that is due to political influence is displayed in column (2). The standard deviation of state percentages for each region is provided in parenthesis in column (2), revealing the variability of political influence within a region and allowing a comparison across regions. It is evident that the predicted values from model (4) are less than one half of the predictions from model (3) and (5). This is not surprising since only the House Appropriations subcommittee variable was significant in model (4), while model (3) included all four subcommittees and model (5) included all but the Senate Appropriations subcommittee. Although different, the predictions still provide information defining plausible ranges of direct disaster relief due to political influence.

[Table 4 about here]

The data in column (1) show that over the eight year sample period hundreds of millions of dollars in excess disaster relief have been appropriated to each region based on political factors rather than actual losses from disasters. Value ranges are $3 million to $410 million for New England and $724 million to $3 billion in the West North Central region. From over $1 billion to over $4 billion in excess direct disaster relief was given to the centrally located, more

agricultural parts of the country. For the entire United States, the range of direct disaster relief as a result of political influence was $4 to $11 billion.

The percentages in column (2) reveal the percent of total direct agricultural disaster relief in a region can be explained by political influences. Comparing regions, it appears that states in the Atlantic and Pacific regions receive the greatest percent of overpayments. Whereas the bulk of direct agriculture disaster relief is given to central states, a lower percentage of these monies tend to be due to political influence relative to other regions. The standard deviation of state level percentages by region (in the parentheses) indicate that the greatest variability of overpayments occurs in the mid-Atlantic. Nationwide, the results here suggest that almost 12 to 30 percent of all direct agricultural disaster relief is due to political influence rather than actual crop and feed losses.

Conclusion

This paper presented a model of U.S. agriculture disaster payments that considered the political processes behind disaster relief. Several simultaneous tobit models using state level data from 1992 through 1999 were used to determine whether direct agriculture disaster payments are higher in those states having congressional representation on subcommittees who oversee the Farm Service Agency's direct disaster payment program. The results showed that those states having representation on the House Appropriations subcommittee receive $44 million annually in excess direct disaster payments.

Results from the simultaneous tobit models also revealed mixed results about simultaneity between crop insurance payments and direct agriculture disaster payments to

individual states. This issue remains a topic for future research. Finally, the effectiveness of various pieces of agriculture disaster relief legislation passed in the 1990s was evaluated.

The final section of the paper explored the total costs of political influence over the direct disaster payment program. Estimates revealed that $4 to $11 billion in direct disaster payments appropriated over the sample period were a result of political influence rather than need resulting from actual disaster losses. This amount is in excess payments to producers amounts to nearly 12 to 30 percent of total direct agriculture disaster payments.

Although direct agricultural disaster payments are often promoted as a savior for farmers hit by a natural disaster, the evidence provided here reveals that the level of direct agriculture disaster relief is, at least in part, politically motivated. The findings here cast doubt on the purely altruistic goal of financial assistance to those most in need, and question the role of government versus private agencies in providing a more efficient system of agriculture disaster relief.

Appendix - States by Census Region

U.S. Census Region	States included in Census Region
New England	Connecticut, Vermont, Massachusetts, Maine, Rhode Island, New Hampshire
Mid-Atlantic	New Jersey, New York, Pennsylvania
East North Central	Michigan, Indiana, Illinois, Wisconsin, Ohio
West North Central	North Dakota, Minnesota, Nebraska, South Dakota, Iowa, Missouri, Kansas
South Atlantic	West Virginia, Delaware, South Carolina, North Carolina, Maryland, Florida, Virginia, Georgia
East South Central	Kentucky, Mississippi, Alabama, Tennessee
West South Central	Arkansas, Oklahoma, Texas, Louisiana
Mountain	Montana, Colorado, New Mexico, Arizona, Wyoming, Nevada, Idaho, Utah
Pacific	Oregon, Washington, California

Note: Regions are based on the U.S. Bureau of the Census

Figure 1. Direct Agricultural Disaster Expenditures 1992 to 1999

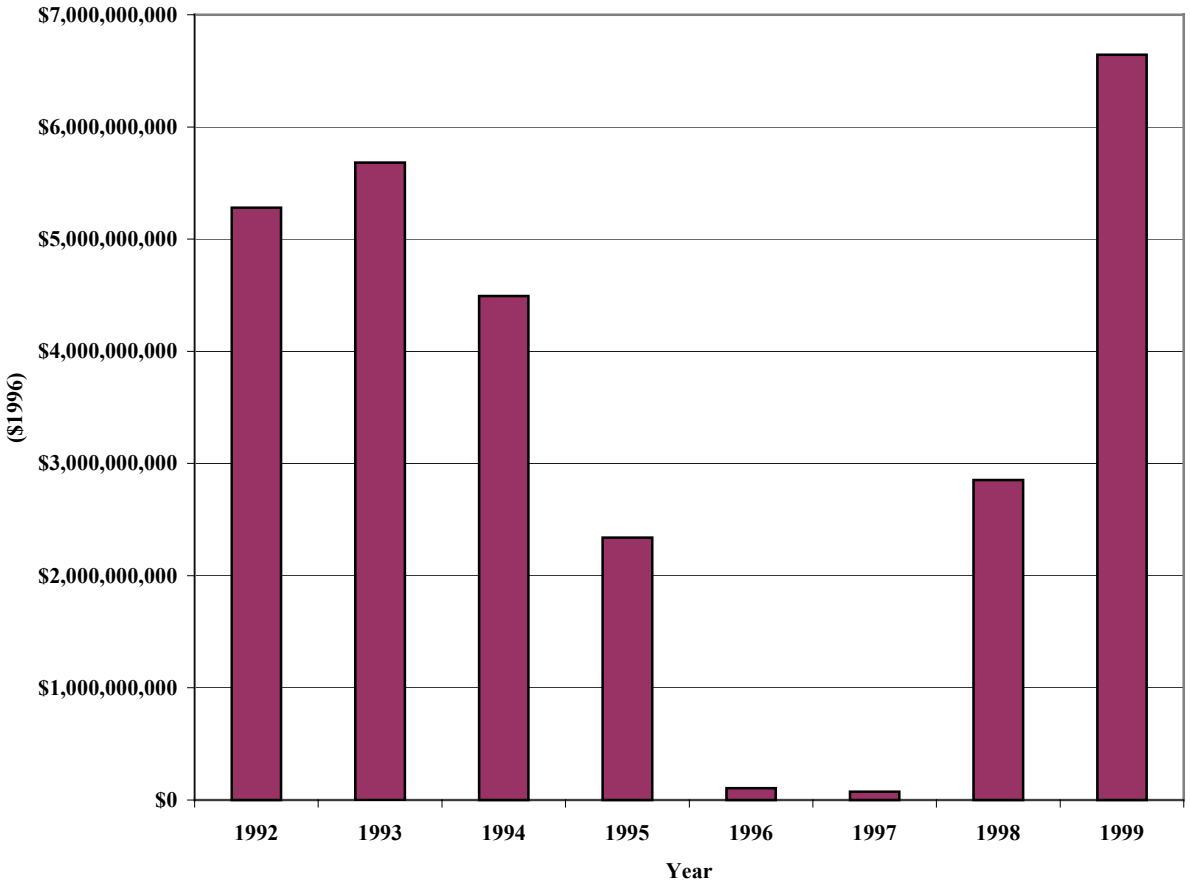

Table 1 - Total Direct Agricultural Disaster Expenditures - 1992 to 1999
Top and Bottom Ten States

Top Ten States			Bottom Ten States		
State	*Expenditures (in million $)*	*Percent of Total*	*State*	*Expenditures (in million $)*	*Percent of Total*
Iowa	$3,757.2	13.67%	New Jersey	37.1	0.13%
Illinois	2,725.4	9.92	Utah	34.1	0.12
Nebraska	2,401.1	8.74	Delaware	24.3	0.09
Minnesota	2,360.0	8.59	West Virginia	17.5	0.06
Texas	1,946.4	7.08	Massachusetts	14.8	0.05
Kansas	1,409.1	5.13	Connecticut	12.9	0.04
Indiana	1,245.9	4.53	Vermont	12.5	0.04
North Dakota	1,055.1	3.84	Nevada	7.4	0.03
South Dakota	1,036.3	3.77	New Hampshire	3.6	0.01
Wisconsin	921.6	3.35	Rhode Island	1.4	0.005

Note: Data obtained from USDA Farm Service Agency and is converted to real 1996 dollars. Alaska and Hawaii are excluded from the sample. Total direct disaster expenditures over the sample period were $27.5 billion.

Table 2 - Direct Disaster Payment Oversight Committees and Average Membership

	Average Number of Members, 1992 - 1999
House of Representatives	
House Agriculture Committee, subcommittee on General Farm Commodities, Resource Conservation, and Credit	21
House Appropriations Committee, subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies	11
Senate	
Senate Agriculture Committee, subcommittee on Research, Nutrition, and General Legislation	7
Senate Appropriations Committee, subcommittee on Agriculture, Rural Development, and Related Agencies	11

Notes: Subcommittee membership by state for each legislator is from the *Almanac of American Politics*, various years. Direct agriculture disaster payment oversight by the above subcommittees was confirmed by the *Almanac* and the USDA Farm Service Agency.

Table 3 - Determinants of Agriculture Disaster Payments - Tobit Estimates (N=384)

VARIABLE	(1)	(2)	(3)	(4)	(5)
Constant	27.039 (1.13)	62.768*** (2.82)	34.621 (1.44)	2.192** (2.37)	2019.607*** (5.53)
(+) Percentage change in precipitation	0.762** (2.05)	1.105*** (2.86)	1.034*** (2.73)	0.011 (0.80)	14.412*** (2.78)
(-) Percentage change in precipitation	-1.483*** (-2.74)	-1.791*** (-3.18)	-1.567*** (-2.85)	-0.014 (-0.69)	-10.803 (-1.45)
Percentage change in low temperature	2.495 (1.20)	2.767 (1.30)	3.184 (1.51)	0.103 (1.29)	82.237*** (2.80)
Crop Insurance	0.730*** (4.83)	-1.662*** (-4.38)	-1.717*** (-4.62)	-2.252*** (-3.37)	-2.051*** (-3.95)
Crop Insurance*D1	-0.263 (-1.27)	1.445*** (2.94)	1.304*** (2.66)	0.771 (1.23)	1.316** (2.39)
Number of Farms	0.0065*** (3.68)	0.0015*** (7.47)	0.0013*** (6.99)	0.00001 (0.13)	--------
Average Farm Size	--------	--------	--------	--------	426.826*** (2.73)
Secretary of Agriculture	56.092* (1.69)	43.202 (1.27)	35.173 (1.05)	-0.329 (-0.23)	-43.979 (-0.10)
House Agriculture Subcommittee	13.361 (1.16)	--------	22.965** (1.97)	0.127 (0.29)	352.419** (2.25)
Senate Agriculture Subcommittee	21.856 (1.50)	--------	25.304* (1.73)	0.868 (1.58)	771.121*** (3.82)
House Appropriations Subcommittee	46.942*** (4.02)	--------	44.194*** (3.71)	1.835*** (4.14)	295.910* (1.86)
Senate Appropriations Subcommittee	33.037*** (2.72)	--------	22.057* (1.81)	-0.003 (-0.08)	171.271 (1.04)
1992	126.727*** (6.81)	119.963*** (6.24)	118.117*** (6.29)	4.668*** (6.34)	2042.252*** (8.00)
1993	118.084*** (6.37)	150.441*** (7.72)	145.422*** (7.65)	7.655*** (9.67)	2713.564*** (9.64)
1994	108.150*** (5.73)	77.350*** (3.85)	71.974*** (3.65)	3.295*** (4.03)	1339.394*** (4.91)

Table 3 (cont.) Determinants of Agriculture Disaster Payments

VARIABLE	(1)	(2)	(3)	(4)	(5)
1995	54.858***	69.127***	70.285***	3.354***	1307.091***
	(2.99)	(3.61)	(3.78)	(4.53)	(4.84)
1997	3.021	-21.321	-22.231	-0.304	-37.450
	(0.16)	(-1.06)	(-1.13)	(-0.42)	(-0.14)
1998	73.066***	54.304***	54.208***	3.552***	1067.345***
	(3.93)	(2.66)	(2.73)	(3.49)	(3.77)
1999	135.432***	129.221***	131.739***	10.077***	3035.404***
	(6.87)	(5.36)	(5.60)	(6.50)	(6.42)
New England	-144.822***	-177.336***	-153.549***	-2.780***	-3568.995***
	(-6.35)	(-8.16)	(-6.60)	(-3.12)	(-9.92)
Mid-Atlantic	-155.916***	-185.343***	-178.652***	-2.496***	-3358.530***
	(-6.53)	(-7.67)	(-7.21)	(-2.75)	(-8.49)
East North Central	-44.910**	-101.116***	-97.613***	1.491*	-1905.181***
	(-2.31)	(-4.82)	(-4.54)	(1.88)	(-5.27)
South Atlantic	-144.187***	-169.112***	-144.672***	0.100	-2647.773***
	(-7.37)	(-9.37)	(-7.33)	(0.10)	(-9.38)
East South Central	-175.270***	-212.164***	-204.906***	-3.033***	-3373.330***
	(-8.63)	(-10.05)	(-9.72)	(-3.85)	(-10.31)
West South Central	-153.922***	-124.138***	-116.629***	-2.859***	-2510.997***
	(-7.38)	(-5.62)	(-5.31)	(-3.61)	(-8.60)
Mountain	-136.806***	-167.454***	-149.076***	-6.368***	-3574.329***
	(-6.59)	(-8.50)	(-6.97)	(-7.45)	(-7.36)
Pacific	-177.609***	-205.694***	-204.657***	-5.403***	-3519.349***
	(-7.66)	(-8.72)	(-8.52)	(-6.03)	(-9.13)
Log-Likelihood	-2208.63	-2223.00	-2211.43	-985.32	-3188.76

Notes: D1 is a discrete variable that takes on the values of '0' up to and including 1997 and '1' for observations in 1998 and 1999. t-statistics are in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%. The representative year is 1996 and the representative region is the West North Central. Dependent variable is agriculture disaster payments scaled by 1,000,000 in model (1) through (3), farm acres in model (4), and number of farms in model (5). Crop insurance is scaled by 1,000,000 in model (1) through (3), farm acres in model (4), and number of farms in model (5). Crop insurance regression results are available upon request.

Table 4 - Impacts of Political Influence on Direct Agriculture Disaster Payments By Region and U.S. Total ($ thousands)

Region	Model 3		Model 4		Model 5	
	(1)	(2)	(1)	(2)	(1)	(2)
New England	409,887	24.6% (25.9)	3,524	3.3% (14.8)	28,789	19.0% (15.3)
Mid Atlantic	725,418	58.9% (62.7)	116,179	19.8% (24.6)	382,654	46.8% (28.6)
East North Central	1,656,766	25.1% (6.3)	646,836	10.5% (7.0)	1,210,254	18.6% (9.0)
West North Central	2,675,648	20.8% (4.8)	724,445	5.2% (6.2)	2,432,731	17.8% (8.3)
South Atlantic	808,383	24.2% (22.7)	180,234	10.5% (9.5)	404,974	18.8% (16.5)
East South Central	1,178,178	58.5% (46.7)	246,463	18.8% (21.1)	986,493	49.6% (29.5)
West South Central	1,290,617	34.6% (21.7)	913,467	17.2% (16.0)	1,440,239	37.7% (15.0)
Mountain	1,025,020	30.2% (27.6)	806,648	19.8% (24.5)	239,041	18.6% (17.6)
Pacific	962,478	60.9% (42.6)	407,270	29.0% (23.6)	518,205	33.9% (7.7)
U.S TOTAL	10,732,395	29.5% (30.3)	4,045,066	11.7% (16.2)	7,643,381	23.9% (18.6)

Note: Dependent variable is agriculture disaster payments in model (3), agriculture disaster payments per farm acre in model (4), and agriculture disaster payments per farm in model (5). Values for column (1) are summed state totals based on the statistically significant subcommittee coefficients for each model reported in Table 3. Values for column (2) are those values in column (1) divided by total predicted values from the respective models in Table 3. Values in parentheses in column (2) are the standard deviation of the percent for each region. The states included in each region are shown in the Appendix.

References

Abler, D., 1989. Vote Trading on Farm Legislation in the U.S. House. American Journal of Agricultural Economics 71, 583-591.

Anderson, G., Tollison, R., 1991. Congressional Influence and Patterns of New Deal Spending, 1933-1939. Journal of Law and Economics 34, 161-175.

Becker, G., 1983. A Theory of Competition Among Pressure Groups for Political Influence. Quarterly Journal of Economics 98, 371-400.

Brooks, J., Cameron, C., Carter, C., 1998. Political Action Committee Contributions and U.S. Congressional Voting on Sugar Legislation. American Journal of Agricultural Economics 80, 441-454.

Buchanan, J., Tullock, G., 1962. The Calculus of Consent: Logical Foundations of Constitutional Democracy. University of Michigan Press, Ann Arbor.

Bullock, D., 1994. The Countercyclicity of Government Transfers: A Political Pressure Group Approach. Review of Agricultural Economics 16, 93-102.

Bullock, D., Coggins, J., 2001. Do Farmers Receive Huge Government Transfers in Return for Small Lobbying Efforts?: Towards Explaining the Persistence and Small Rent Dissipation of U.S. Agricultural Policy. Working paper, University of Illinois Department of Agricultural and Consumer Economics.

Bullock, D., Rutstrom, E., 2001. The Size of the Prize: Testing Rent-Dissipation when Transfer Quantity is Endogenous. Working paper, University of Illinois Department of Agricultural and Consumer Economics.

Couch, J., Shughart II, W., 1997. The Political Economy of the New Deal. Cheltenham, UK and Northampton, Mass: Edward Elgar.

Faith, R., Leavens, D., Tollison, R., 1982. Antitrust Pork Barrel. Journal of Law and Economics 25, 329-342.

Gardner, B., 1987. Causes of Farm Commodity Programs. Journal of Political Economy 95, 290-310.

Gardner, B., 1994. Crop Insurance in U.S. Farm Policy, in D. L. Heuth and W. H. Furtan (Eds.), Economics of Agriculture Crop Insurance: Theory and Evidence, Kluwer Academic Publishers, Boston.

Garrett, T., Sobel, R., 2003. The Political Economy of FEMA Disaster Payments. Economic Inquiry 46, 496-509.

Goodwin, B., Smith, V., 1995. The Economics of Crop Insurance and Disaster Aid. The AEI Press, Washington, D.C.

Heckman, J., 1978. Dummy Endogenous Variables in a Simultaneous Equation System. Econometrica 46, 931-959.

Kau, J., Rubin, P., 1982. Congressmen, Constituents, and Contributors. Martinus Nijhoff, Boston.

Krueger, A., 1974. The Political Economy of the Rent Seeking Society. American Economic Review 64, 291-303.

Lee, H., Harwood, J., Somwaru, A., 1997. Implications of Disaster Assistance Reform for Non-insured Crops. American Journal of Agricultural Economics 79, 419-429.

Marsh, T.L. and R.C. Mittelhammer. 2003. "Generalized Maximum Entropy Estimation of Spatial Autoregressive Models," paper for Advances in Econometrics: Spatial and Spatiotemporal Econometrics, Louisiana State University.

Moe, T., 1987. An Assessment of the Positive Theory of Congressional Dominance. Legislative Studies Quarterly 12, 472-520.

Schmitz, A., Furtan, H., Baylis, K., 2002. Agricultural Policy, Agribusiness, and Rent Seeking Behaviour. University of Toronoto Press, Toronto.

Schmitz, A., Just, R., Furtan, H., 1994. Crop Insurance in the Context of Canadian and U.S. Farm Programs, in Heuth, D., Furtan, W., (Eds.) Economics of Agriculture Crop Insurance: Theory and Evidence. Kluwer Academic Publishers, Boston.

Smith, R., Blundell, R., 1986. An Exogeneity Test for a Simultaneous Equation Tobit Model with an Application to Labor Supply. Econometrica 54, 679-685.

Tullock, G., 1967. The Welfare Costs of Tariffs, Monopolies and Theft. Western Economic Journal 5, 224-232.

U.S. Department of Agriculture. February 2003. Agricultural Assistance Act of 2003. Fact Sheet, Farm Service Agency, Washington, D.C.

U.S. General Accounting Office. 1989. Disaster Assistance: Crop Insurance Can Provide Assistance More Effectively Than Other Programs. Report to the Chairman, Committee on Agriculture, House of Representatives. GAO/RCED-89-211, Washington, D.C.

Weingast, B., Marshall, W., 1988. Organization of Congress; or, Why Legislatures, like Firms, Are Not Organized as Markets. Journal of Political Economy 96, 132-163.

Williams, J., Carriker, G., Barnaby, A., Harper, J., 1993. Crop Insurance and Disaster Assistance Designs for Wheat and Grain Sorghum. American Journal of Agricultural Economics 75, 435-447.

Wright, B., Hewitt, J., 1994. All-Risk Crop Insurance: Lessons From Theory and Experienc,. in Heuth, D., Furtan, W. (Eds.), Economics of Agriculture Crop Insurance: Theory and Evidence. Kluwer Academic Publishers, Boston.

Wright, G., 1974. The Political Economy of New Deal Spending. Review of Economics and Statistics 56, 30-58.

Young, Marilyn, Michael Reksulak, and William F. Shughart II. (2001). "The Political Economy of the IRS," *Economics and Politics* 13: 201-220.

ENDNOTES

[1] The Agricultural Assistance Act of 2003 offers both crop and livestock programs, while outlays from the Farm Service Agency (FSA) to individual producers have cross-compliance requirements between direct agricultural disaster payments and crop insurance coverage. For example, in the 2003 Act, payments to producers are made for losses over 35% at 50% (45%) with (without) crop insurance or noninsured crop disaster program coverage (USDA 2003). The FSA administers agricultural disaster programs.

[2] Other aspects of disaster assistance have been examined in the literature. Lee, Harwood, and Somwaru (1997) studied the implications of disaster assistance reform on previously non-insured crops. Williams, Carriker, Barnaby, and Harper (1993) compared the effectiveness of crop insurance and disaster assistance program designs, finding that individual crop insurance was preferred to area crop insurance.

[3] Wright (1974), Anderson and Tollison (1991), and Couch and Shughart (1997) found that New Deal Spending across states was correlated with congressional power and the importance of a state's electoral votes in the next presidential election. Federal Trade Commission (FTC) case rulings tend to be more favorable for firms with headquarters in a district having representation on FTC congressional oversight committees (Faith, Leavens, and Tollison, 1982). IRS audit rates are substantially lower in the congressional districts of members on key congressional committees overseeing the IRS (Young, Reksulak, and Shughart, 2001), and FEMA disaster payments are higher in those states having representation on FEMA oversight committees (Garrett and Sobel, 2003).

[4] Participation rates in the crop insurance program are usually based on the percent of total crop land acres in a state or county that are insured through the Crop Insurance program. Also, crop insurance participation rates have increased steadily since the late 1990s. The $10 billion figure is the federal portion of crop insurance (not total indemnities) and does include federal subsidies to farmers. It does not include federal reimbursement of private companies' administrative and operating expenses, nor does it include the federal cost of administering the Risk Management Agency.

[5] The Agriculture and Consumer Protection Act of 1973 not only authorized federal farm programs but also disaster payments and disaster reserve inventories, establishing disaster payment programs for wheat, upland cotton and feed-grains. It set the target price system that served to establish the disaster payment rate if a farmer's yield fell below 67%.

[6] In some cases, such as the 1993 Midwestern floods, Congress pressured the Risk Management Agency to retroactively provide coverage on all crop insurance policies. Most farmers, however, chose not to pay the additional cost of prevented planting coverage.

[7] Direct disaster payments have also been criticized for other reasons (Goodwin and Smith, 1995; U.S. GAO). First, the availability of direct disaster payments creates an incentive for farmers to keep producing in high-risk areas, thereby continuing the probability of a loss and the need for some sort of assistance. Also, because individual production histories are not always available, county averages are often used. As a result, farmers who produce less than the county average

receive disaster aid in excess of their actual losses. Finally, from a budgeting perspective direct disaster aid does not have predictable annual costs.

[8] As pointed out by an anonymous reviewer, the potential substitution between disaster payments and crop insurance participation is somewhat unclear over time. In the early 1990s disaster payments were triggered by poor growing conditions such as droughts, floods, and other losses in production. In the late 1990s disaster payments were likely the result of the ad hoc scaling up of payments in response to declining prices. The relationship between crop insurance and disaster payments is discussed later in the paper.

[9] For example, disaster payments to producers were authorized through the Food and Agriculture Act of 1977 (although there were concerns over the cost of the program). At the end of the 1980s, widespread drought caused Congress to pass the Disaster Assistance Acts of 1988 and 1989 that gave direct assistance to producers for 1988 crop losses and permanently authorized the livestock feed assistance program. Outlays to crop and livestock producers exceeded $4.9 billion for 1988 and 1989.

[10] A complete list and description of all direct disaster relief programs is available through the FSA. The FSA data set maintains individual transactions of all agricultural disaster payments in the U.S. For the purposes of the current study, FSA aggregated the transactions across programs and individuals each year to obtain an annual state level disaster payment. For the 48 contiguous states from 1992 to 1999 this yielded 384 observations.

[11] Real crop values and crop yields were initially used to proxy for the size of an agricultural disaster. Both of these variables are highly correlated with the precipitation variable. In addition, the basic cause of an agricultural disaster is not the loss in crop yields or crop values but the lack of precipitation which then causes a reduction in values and yields.

[12] As an alternative, we also considered annual deviation from a historical 20-year trend. These estimates were not statistically significant.

[13] Admittedly, the annual percent change in lowest temperature at the state level may not fully capture the impact of freezes on disaster payments since temperatures and crops growing seasons vary dramatically within and across states. However, the aggregate nature of the data prevents any less aggregated measure. Also, positive and negative percent changes in temperature were not separated into two different variables because there is very little variation in the lowest temperatures in any state across time, resulting in many zero observations for each variable.

[14] In rare cases a state had more than one representative on each of the House subcommittees. For the House Appropriations subcommittee, New York had two representatives from 1997 to 1999. On the House Agriculture subcommittee, California had three representative from 1993 to 1994 and Texas had three representatives from 1992 to 1994. States with two representatives on the House Agriculture subcommittee included Georgia (1997-1999), Iowa (1992), Minnesota (1993-1994), Missouri (1995-1996), North Carolina (1997-1999), and Texas (1995-1996). Initial models were run with the number of oversight members from each state rather than a simple 0,1 coding. These results were almost identical between the two specifications.

[15] Representation in the House is not normally for an entire state, so a representative is not necessarily representing the entire state.

[16] Following the 1996 Farm Bill, direct disaster payments were only available to farmers that had purchased catastrophic crop insurance.

[17] The nine regions are New England, Mid-Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific.

[18] Overall 3 percent of the sample recorded zero disaster expenditures. Although 3 percent seems small, the zero observations were concentrated over a specific time period. For 1996 and 1997 the number of zero observations exceeded 10 percent of the number of observed allocations within those two years.

[19] The marginal effects of a binary variable are more difficult to interpret. The marginal effects of each coefficient will gladly be provided upon request.

[20] Testing for simultaneity is done by examining the significance (using a *t*-statistic) of a parameter γ, where $\gamma = \sigma_{1.2}/\sigma_2$ and $\sigma_{1.2} = [\sigma_1^2 (1-\rho^2)]^{½}$ and $\rho = \text{corr}[e_1,e_2]$. A simultaneous system is suggested if γ is significantly different than zero at conventional levels, whereas a single equation tobit model is appropriate if $\gamma = 0$.

[21] It is also possible that endogeneity arises in the model because of spatial autoregressive processes. See Marsh and Mittelhammer (2003) for an alternative model of disaster relief with a spatial autoregressive dependent variable.

[22] The log likelihood function for the simultaneous tobit can be found in Smith and Blundell (1986) page 680. Simultaneity test results for the crop insurance variable are available from the authors.

[23] The test results for the subcommittee variables followed Heckman (1978) and can be obtained from the authors. That we find committee assignments to be exogenous yet we claim agriculture disaster relief is politically desirable may seem like a contradiction. However, the subcommittees that oversee disaster relief are also responsible for overseeing other functions of government. In addition, because natural disasters are random and uncertain, it seems legislators would not actively seek to be on disaster oversight committees for the sole purpose of manipulating disaster aid because the opportunities to take advantage of this assignment are not clear and foreseen in advance. However, once a disaster does occur in a committee member's state, agencies are in a position to gain from increasing expenditures above their 'normal' levels.

[24] Variables in $\mathbf{x_2}$ included per capita personal income, farm income, average farm size, total crop values, and electoral importance. See Garrett and Sobel (2003) for definition of the electoral importance variable. Income variables and farm acres are from the U.S Bureau of the Census' Bureau of Economic Analysis. Crop values were obtained from the USDA's National Agricultural Statistics Service. Not included in $\mathbf{x_2}$ were subcommittee and secretary of agriculture variables to avoid potential endogeneity problems with crop insurance payments.

[25] Model (4) and (5) were included on the recommendation of anonymous reviewers. Model (1) through (3) provide empirical evidence on determinants of annual disaster payments to individual states, while models (4) and (5) provide empirical evidence on the determinants of annual disaster payments per acre and per farm. The reason we consider various forms of disaster payments is that there is no established empirical or theoretical specification for a legislator's decision making. However, a casual hypothesis is that a legislator would attempt to maximize total payments or payments per farm over payments per acre. In addition to considering various legislator objective functions, models (4) or (5) may also remove heterogeneity bias that the year and region dummies along with the number of farms in models (1) through (3) fail to account for.

[26] Because the dependent variable in model (5) is normalized by the number of farms, we included average farm size (number of farm acres per state divided by the number of farms per state) as a RHS variable. This was motivated per recommendation of an anonymous reviewer to test whether farmers generate greater political influence in states with a few large farms than they do in states with many small farms.